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G4F FAA

(56) Documents Cited  
US 4295438 A US 3721983 A US 3676779 A

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(54) Abstract Title

**Distress location beacon**

(57) A personal hand held distress beacon consists of a body 13 encasing a balloon 12, which supports a light source 15. The balloon 12 is automatically ejected from its storage position in the body on removal of a retention pin 31, which releases a compressed spring 18. At the same time lighter than air gas is released from a container 32 to inflate the balloon 12 through a flexible tube 23. Once fully inflated the tube 23 automatically breaks at a weak portion 26. The balloon 12 then ascends to the height of an attached tether line 25. The light source 15 is controlled by a photocell 22 to activate at low ambient light levels and the balloon 12 is part transparent and part reflective to aid its visibility.

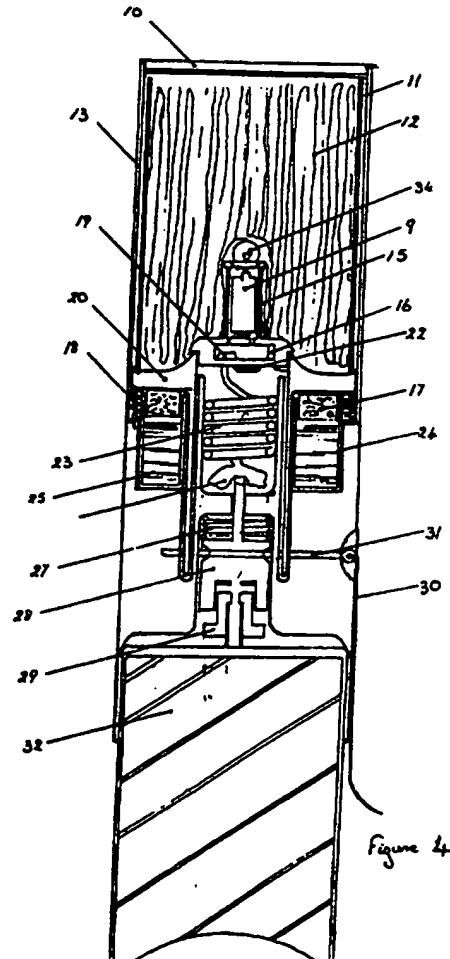


Figure 4

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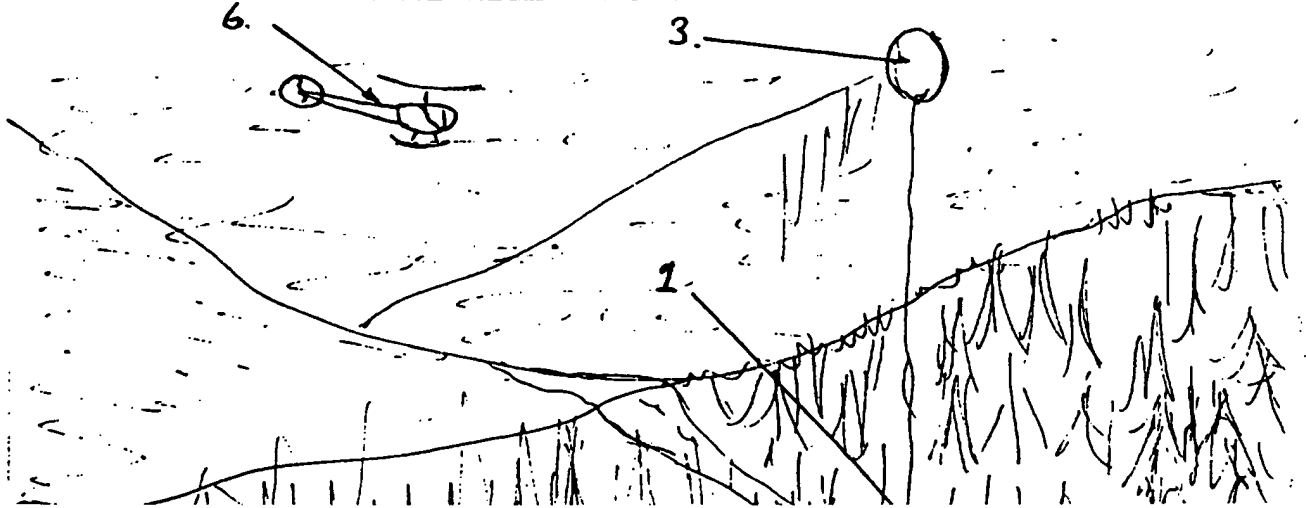
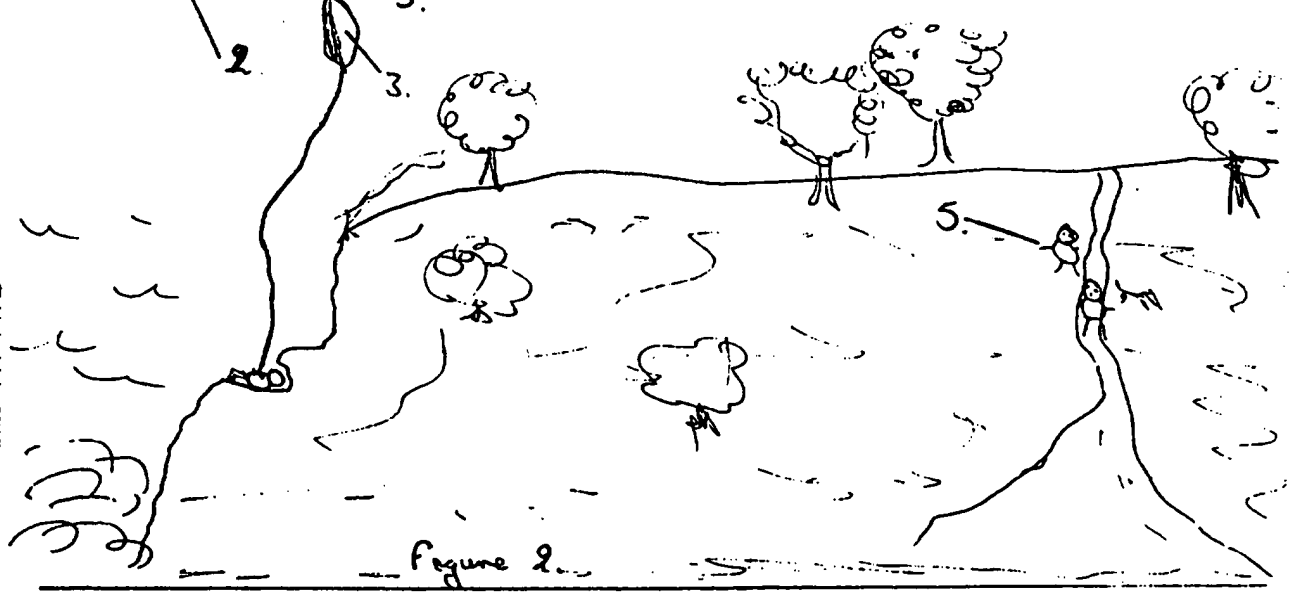
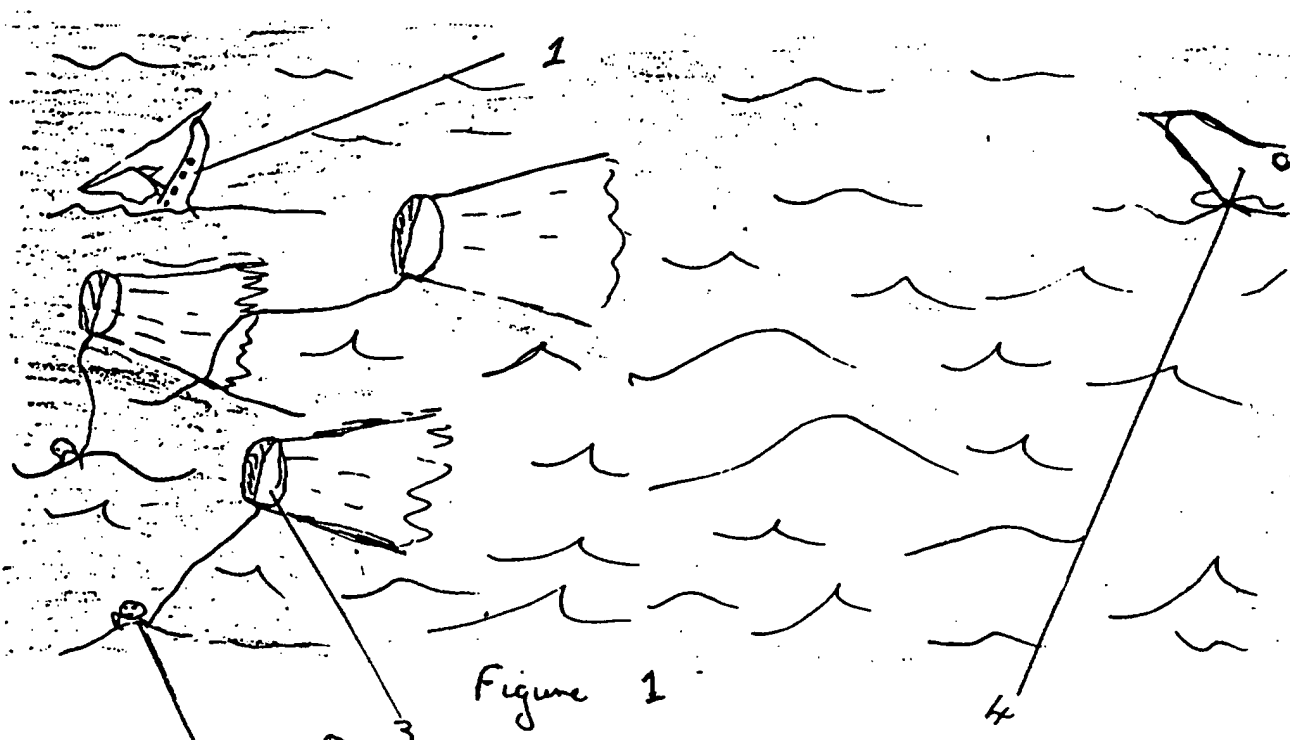


Figure 1 is a cross-sectional view of a mechanical device, likely a lamp or a small furnace. The device consists of a main body (10) with a top cover (11) and a base (32). The interior of the main body is filled with a material (12). A central vertical assembly (13) is located within the main body, featuring a central tube (14) and a series of horizontal tubes (15) arranged around it. A central vertical tube (16) extends from the top of the main body down to the base. The base (32) is a rectangular block with a series of diagonal lines (31) on its side. The device is labeled with various numbers indicating its components: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32.

Figure 4

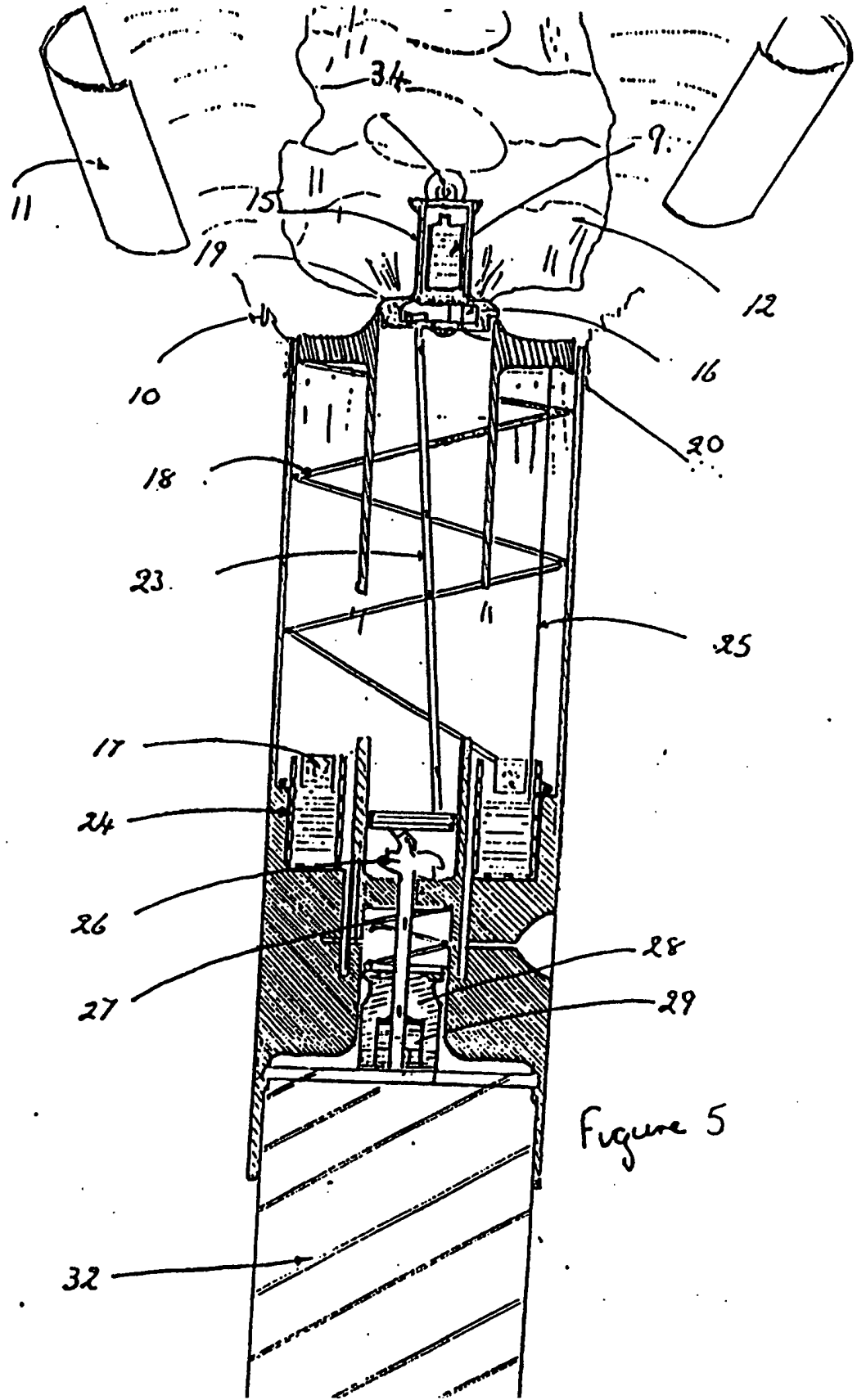


Figure 5

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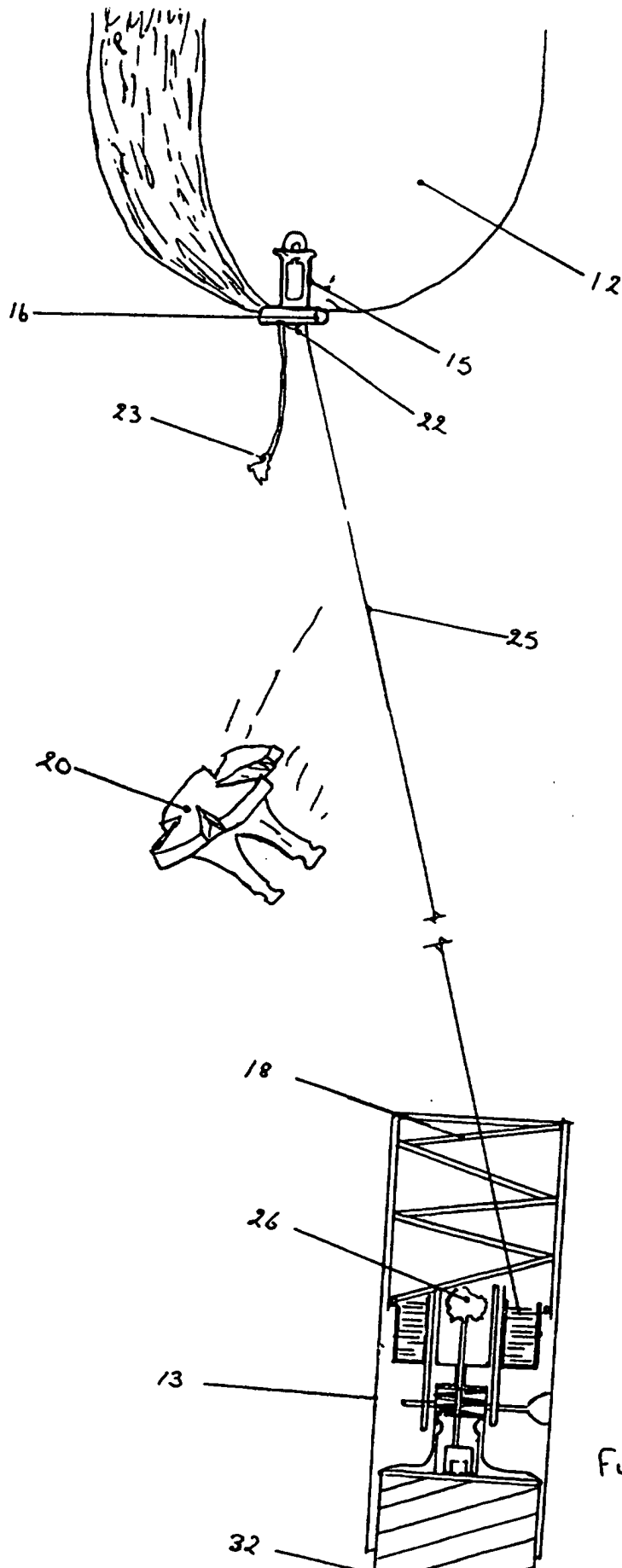


Figure 6.

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This invention relates to a Distress Location Beacon.

Distress flares are well known and well used as a form of signalling to others when in trouble. Manufactured from a mixture of explosive agents they are fired by a pistol or container. Once fired they burn a light in the sky for a few seconds then faid. Hopefully the light would be seen and rescue got underway. These types of flares however are expensive, have a very short life and can be a fire hazard and are normally stored in a central point that might not be accessable in a crisis. Once used the location of the user could be considerably changed once rescue is under way. Rescue is likely be called off at night fall because of poor visilbility.

According to the present invention there is provided a personal Distress Location Beacon comprising a large balloon having a means of reflecting Radar signals stored within the body of the beacon and supporting a light source suspended within it, containing a light sensitive means of activating the power to the light in darkness. A one way valve to prevent the escape of the gas A switch or form of power braker to which an elongated member is atatched, a spool on which the elongated member is wound from which it can be unwound, and stored within the body of the Beacon. A means of storing a gas source to inflate the balloon

with a valve controlling its release . A means of ejecting the balloon from its storage and at the same time activating the release of the gas, a flexible tube allowing the transfer of gas from its source to the balloon. A means of severing the flexible tube stored within the body of the Beacon when the balloon has inflated.

A specific embodiment will now be described by way of example with reference to the accompanying drawing in which:

- Figure 1. Is a view of three people washed overboard at sea.
- Figure 2. Shows a person injured on a cliff ledge.
- Figure 3. A pilot is forced to ejects over jungle.
- Figure 4. Is a view of the location Beacon in its ready to use arrangement.
- Figure 5. Shows the location Beacon after the pin is removed.
- Figure 6. Is the location Beacon inflated and breaking from the body.

REFERRING TO THE DRAWINGS.

Figure 1. shows three people in heavy seas 1 when their boat is sinking 2, with 30 ft waves these people would be difficult to see and impossible to locate at night. The location Beacon attached to their belts are inflated 3. The suspended night light is activated and each flare light can be seen for some distance by other craft 4.

Figure 2.

A person 1 has fallen down a cliff face and is stranded. Although there are people on the cliff top footpath 5 his shouts for help cannot be heard. The location Beacon 3 is released from his rucksack, he then becomes visible for miles.

Figure 2.

A pilot 1 is forced to eject over Jungle, although unhurt he cannot be seen from the air by his rescuers 6, the location Beacon 3 is released and he is seen clearly with the minimum of lost time.

Figure 4.

Shows the body of the Beacon 13 a foil 10 as a means of sealing at one end and a gas cylinder 32 at the other end. A balloon 12 consisting of two parts, half clear and half foil reflective coated is folded to fit within a protective two part tube 11 and capped 14. Supported by the ejector stem 20 which is under pressure from the spring 18.



The ejector stem 20 is anchored to the body of the Beacon by the pin or other means 31. Supported on the centre of the ejector stem 20, is the light assembly 15 which incorporates the light source 34. A power source 9, power braker 16 and a light sensor 22 plus the non return valve 19.

To the centre of the ejector stem 20 is the gas line 23 and the fracture flange 26. Below the stem 20 and around the edge of the body is the tether line storage spool 24 the tether line 25 is anchored to the body 13 and to the light assembly 15 with the bulk of the line 25 stored within the spool 24, to retain the line 25 in its position until use a soft sponge 17 is placed over.

At the lower section of the body 13 is the release cap 28 under pressure from the spring 27, this is also restrained by the pin or other means 31. The gas container 32 is fitted with a valve 29 and filled with Helium. A tab 33 is attached to the pin 31 to assist in its easy removal.

Figure 5.

In order to release the location Beacon the pin 31 is removed, the ejector stem 20 under pressure from the spring 18 pushes the balloon 12, the light assembly 15 together with guards 11 out through the foil cover 10. At this stage the gas line 23 starts to pay out. At the same time the release cap 28 under pressure from the spring 27 is forced down onto the pressure release valve 29. Gas then flows up the hollow stem of the cap 28 through the non return valve 19 and the balloon starts to inflate.

Once the balloon 12 is inflated, (Figure 6), the weak fracture flange 26 is stretched by the pull of the balloon 12 and the increase in gas pressure causing it to burst. The balloon 12 then starts to ascend to the pre-determined height and is held from drifting by the tether line 25, released from the spool 24.

When the balloon 12 reaches its height and jerks to a stop the tension on the tether line 25 activates the power braker 16 completing the circuit to the light source sensor 22. When night fall arrives the sensor 22 will be activated completing the power source to the bulb 34 by the battery 9. The balloon 12 through its constant movement and twisting will seem to be flashing to the searching parties and seen for miles.

## CLAIMS

1.

A personal distress Beacon consisting of the casing or body of the Beacon, a balloon folded within the body casing and surrounded by protective guards and supporting a self activating light assembly, able to be ejected from the body casing once a pin is released a valve for the control and release of the gases a cylinder of compressed gases lighter than air by which the balloon can be inflated a means of transferring the gases to the balloon once ejected and a line to which the balloon is anchored.

2.

A personal distress Beacon as claimed in (1) wherein ejector means a plunger or sleeve restrained under pressure by other means and being the base on which the balloon, guards and light assembly will be seated.

3.

A personal Distress Beacon as claimed in 1,2 wherein a light assembly means a light fitted within the base of the balloon having its own power supply and a means of automatically activating to suit the light conditions, a means of containing the gases within the balloon.

4.

A personal Distress Beacon as claimed in 1,2,3 wherein automatically activating the light assembly means a photo cell that is light sensitive and will complete the power loop once day light is restricted.

5.

A personal Distress Beacon as claimed in 1 to 4. wherein a gas transfer means a flexible tubing material that will aid the transfer of gas to the balloon and will at one point be of less strength than the Balloon under pressure.

6.

A personal Distress Beacon as claimed in 1 to 5, wherein a pin means a method of restraining both the ejector and gas valve for simultaneous release.

7.

**A personal Distress Beacon as claimed in all the above , where in guards means two halves of a cylindrical tube which will protect the Balloon through the ejection from the body f the Beacon.**



# The Patent Office

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Application No: GB 9712678.3  
Claims searched: 1-7

Examiner: J Betts  
Date of search: 29 September 1998

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): G4F (FAA, FAB)

Int Cl (Ed.6): G08B 5/00

Other: On-line: WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US4295438 (Porter)	
A	US3721983 (Sherer)	
A	US3676779 (Faulring)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of the application